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April 16, 1959

Central Intelligence Agency
Washington 25, D. C.

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JUST <u>22</u>	NEXT REV <u>2010</u>	AUTH: HR 78-2

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Dear [redacted]

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This is in response to your inquiry regarding the (existence and availability of transistors capable of delivering 5 watts of RF energy at 30 megacycles.

These transistors do exist in a developmental state. Sample units have been delivered to R. D. Alberts, Wright Air Development Center, Wright-Patterson Air Force Base, Dayton, Ohio, in connection with our bid for an engineering pilot line contract for these transistors. Samples are also being sent to Mr. B. Reich, Chief, Circuit Functions Branch, Solid State Devices Development, USASDRL, Fort Monmouth, New Jersey, in connection with a similar contract bid.

Information regarding these transistors is not classified, and we shall be glad to supply any information which would be helpful to you. These transistors are in a developmental state. The necessary engineering to assure controlled characteristics and good reliability has not been done, and its performance is dependant upon Pacific Semiconductor's success in bidding for the aforementioned contracts.

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their characteristics must be treated on an individual basis. To insure that the samples are of real value, a detailed interchange of technical information is essential.

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☐ DECL BY 2010
 EXT BY 3 AME
 REASON 3 & (3)

Sincerely yours,

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JRP/pb

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Dear Don,

As you suggested in our recent telephone conversation, I am enclosing a set of specifications for the type of transistor we would like to have for the RT-21 output stage. These specifications were arrived at after considerable discussion. In the interest of clarity, I feel a word of explanation is indicated.

We have listed the various items under the headings of "minimum", "average" and "maximum". By this we mean, except in the case of temperature, the following. The number under "minimum" represents the value which we feel is about the lowest which we could use advantageously. For example, if the power gain is lower than 10 db it would take another power stage to drive the output stage. The "average" figure represents what we would like, if possible, either now or at some time in the future. By asking for a power output of 10 watts we are probably extending pretty far into the future; however, two 5 watt transistors in parallel would, for the present, be as acceptable.

These specifications are not independent of each other. For instance, in asking for operation into a 1000 Ω load impedance, at a 10 watt power level, we are implying a peak to peak voltage swing of nearly 300 volts. This is pretty rough on present-day transistors! On the other hand, if you could supply a 3 watt unit, the peak to peak swing reduces to about 150 volts, which is considerably more realistic at the present time.

We are looking forward to the first shipment of these transistors any day now!

Very many thanks for your help,



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	Min.	Average	Max.	
Power Output at 30 mc	___*	10	___	watts
Power Gain at 30 mc	10	16	___	db
Output Impedance	500	2000	___	ohm
Output Capacitance Common Emitter	___	5	10	<i>μf</i>
Load Impedance	same as output impedance			
Ambient Temperature	-40	25	+40	°C

*

The maximum power that is available at this time at frequencies up to 30 mc.

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**HEADQUARTERS
U. S. ARMY SIGNAL RESEARCH AND DEVELOPMENT LABORATORY
FORT MONMOUTH, NEW JERSEY**

REPLY REFER TO
SYMBOL: PLP
12 05 1.1

ADDRESS REPLY TO
COMMANDING GENERAL
U. S. ARMY SIGNAL R & D LABORATORY
FORT MONMOUTH, NEW JERSEY

Central Intelligence Agency
2140 E Street, Northwest
Washington 25, D. C.
Attention:

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Gentlemen:

In compliance with the request contained in letter from the Office of the Chief Signal Officer, Washington, D. C., dated 11 May 1959 regarding the availability of HF Power Transistor Samples, this Laboratory is inclosing four (4) each PSI seventy (70) mc, 1 watt devices with specifications and parametric values for use by your agency.

Very truly yours,

- 2 Incl
1. PSI, 70 mc
1 watt devices (4 ea)
2. Specification

**FRANK A. BRAND, Acting Chief
Physical Electronics Branch
Solid State Devices Division**

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istor #	<i>Calogay Microamp</i> Verb. 100 100 4A	<i>out or back. biased</i> I_{EO} 2 ∇	V_{CB_0} 1 ma	<i>Microammeter with switch is open</i> I_{C_0} 10 ∇ 4A	I_{C_0} 100 ∇	<i>Collector resistance</i> r_{c_0} 10 ∇	<i>spreading base resistance</i> r_{b_1}	<i>res. for electrodes</i> r_{e_1}	r_{e_2}	r_{b_2}	I_{C_0} 1 ∇ h	V_{CB_0}	P.O. Mw @ 70mc @ 30ma
.257	4.9	.740	110	.014	560	4.5	31	7.3	19.4	.330	95	1030.	
.270	5.2	.680	180	.015	.210	3.9	44	9.5	15.6	.294	162	1050.	
.285	4.8	1.70	150	.001	2.5	4.1	36	9.4	29.5	.350	144	1120	
299	5.0	1.25	130	.700	240.	5.2	36	6.3	12.0	.286	92	1100	

*80-90 Volts
at Collector*

*used as an
oscillator in a
transmission line
setup.*

*mod or is at which
Power is obtained*

*Common
Base*